

Thus, from *Astragalus adsurgens* we have isolated kaempferol glycosides — trifolin, kaempferol rutinoside, and robinin — and also two isorhamnetin glycosides — isorhamnetin 3-O-β-D-glucopyranoside and an isorhamnetin 3-glucoside 7-rhamnoside.

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SWERTIAJAPONIN FROM *Iris lactea*

N. I. Pryakhina and K. F. Blinova

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In an investigation of the ethyl acetate fraction obtained by treating an ethanolic extract from the epigeal part of *Iris lactea* Pall. we have isolated apigenin C-glycosides and two luteolin glycosides [1-3].

Continuing an investigation of the same fraction, by chromatography on a column of silica gel and polyamide with elution by ethanol-chloroform (90:10) and ethanol-water (20:80) mixtures we have isolated a substance (VI). It was a light yellow crystalline powder with mp 264-265°C (50% ethanol); $[\alpha]_D^{25} - 55^\circ$ (c 0.1; ethanol), R_f 0.37 (15% acetic acid), 0.56 (butan-1-ol-acetic acid-water (4:1:2)).

The full acetate of substance (VI) had mp 153-155°C.

The prolonged heating of (VI) with dilute acid did not lead to the formation of an aglycon and a carbohydrate component, but on paper chromatograms in the 15% acetic acid system a new substance with a lower R_f value (0.31) was detected which gave an equilibrium system with the initial compound. The formation of the latter is characteristic for 6-C-glycosides. Hydrolysis with hydriodic acid gave the aglycon luteolin, and D-glucose was detected as the carbohydrate component.

The IR spectrum of substance (VI) had absorption bands at (cm^{-1}) 3440-3020 (phenolic hydroxyls), 1650 (C=O of a γ-pyrone ring), 1600, 1540, 1480 (conjugated double bonds); 1305 (methoxy group); and 1020-1050 (pyranose form of a sugar). UV spectrum, $\lambda_{C_2H_5OH}^{max}$, nm: 245, 275, 350, + NaOEt 267, 404; + NaOAc 269, 355, + NaOAc/H₃BO₃ 266, 370; + AlCl₃/HCl 279, 355. Analysis of the results of UV spectroscopy showed the presence of free hydroxy groups in positions 3', 4', and 5, and substitution at C₇.

A physicochemical study of substance (VI) and a comparison of the results obtained with those given in the literature permitted the compound isolated to be characterized as 6-C-β-D-glucopyranosyl-7-O-methyl-luteolin or swertiajaponin. This is the first time that swertiajaponin has been isolated from representatives of species of the *Iris* genus [5, 6].

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TERPENOIDS OF *Achillea micrantha*

S. M. Adekenov, N. M. Gafurov,
A. Zh. Turmukhambetov, and V. I. Ivlev

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The genus *Achillea* L. numbers more than 50 species growing on the territory of the USSR. Of them, 11 species grow in Kazakhstan [1]. The majority of species of *Achillea* L. contain biologically active sesquiterpene γ -lactones [2].

Achillea micrantha Willd. is a plant which is widely distributed in the territory of Kazakhstan. From its epigeal part collected in the phase of mass flowering in the environs of the village of Zhairam, Dzhezkazgan province, Kazakh SSR, by aqueous extraction followed by chloroform treatment we obtained the total extractive substances, which were chromatographed on a column of KSK silica gel at a ratio of material to support of 1:24. From the benzene-ether (4:1) and (1:1), ether, and ether-ethyl acetate (4:1 and 1:1) fractions four sesquiterpene lactones were isolated: achillin (yield 0.05% calculated on the air-dry raw material) [3], artilesin (0.003%) [4], grossmizin (0.053%), and micranthin (0.003%) [6].

Extraction of the epigeal part of *A. micrantha* with chloroform gave a combined product, and this was treated with 60% ethanol. The filtrate was extracted with chloroform. The chloroform extract was chromatographed on a column of KSK silica gel (1:15). When the column was eluted with carbon tetrachloride-benzene (1:1), benzene, benzene-ether (9:1, 4:1, 1:1, and 1:4), achillin (0.02%), micranthin (0.02%), grossmizin (0.04%) and kaempferol 3-rhamnoside (0.04%) [7] were isolated.

The roots of *A. micrantha* were extracted with acetone and resin so obtained was chromatographed on a column of KSK silica gel (1:22), the benzene and benzene-ether (9:1) fractions yielded campesterol (0.005%) [8]. No sesquiterpene lactones were detected in the roots.

This is the first time that achillin, grossmizin, artilesin, kaempferol 3-rhamnoside and campesterol have been isolated from this species of *Achillea*. Achillin possesses antifeedant activity [9].

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